SCHLAGE LiNK™

Thermostat
Model TZEMT400AB32MAA
User Guide

TRANE

Contents

Product Specifications

Product Model:	TZEMT400AB32MAA
Product:	Thermostat for Heating and Cooling HVAC System control. Z-Wave™ RF communications enabled
Thermostat	
Size:	5.7" wide x 4.0" height x 1.2" depth
Display:	Graphical LCD, 2.75" x 1.5", 64x128-pixel
Backlight:	Yes, Blue/white, Controllable, on, off, timeout
Contrast:	Adjustable on screen
Buttons:	6
LEDs:	4 (3 green, 1 red)
Power:	24VAC from HVAC System
HVAC System Type Compatible:	Standard (gas/electric) or Heat Pump
Multistage System Compatible:	Standard HVAC Systems: 2 stage heating, 2-stage cooling Heat Pump Systems: 3 stage heating (2-compressor, 1 aux heat), 2-stage cooling
Heat Pump change over valve:	Selectable change over with cool or with heat
Communications:	Z-Wave™ RF

Overview

Z-Wave™ Thermostat

The Z-Wave™ thermostat provides for typical thermostat control of a central heating and cooling HVAC system plus has the added feature of Z-Wave™ communications for remote control.

The thermostat has a large, backlit graphical display, control buttons, status LEDs and a temperature sensor. The thermostat can display multiple screens for different functions of the thermostat. In the default thermostat control screen, shown below, it displays the current temperature, setpoint, system mode, manual fan mode, time, outside temperature and other information.
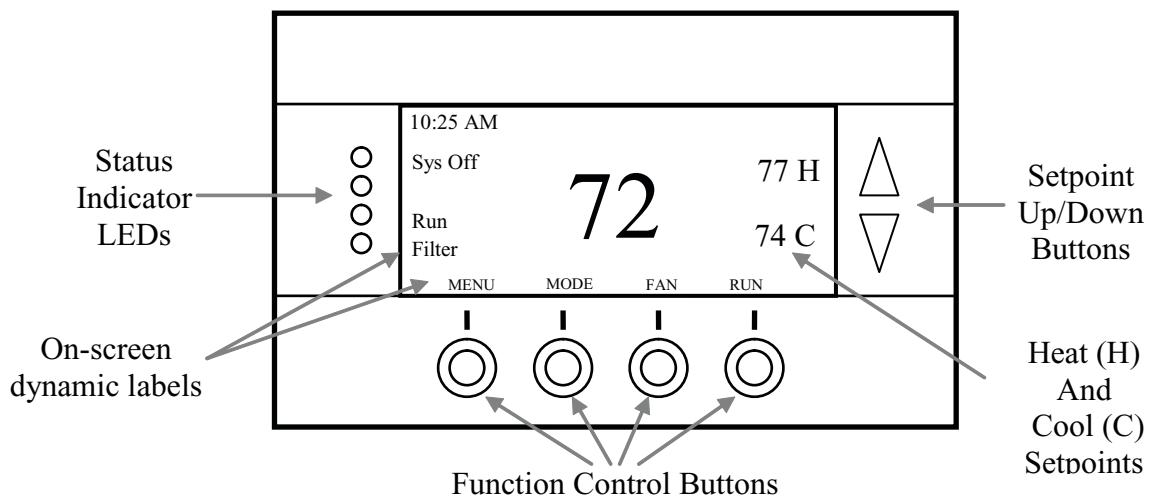
Display operation

Thermostat control screen
Normally the thermostat displays the thermostat control screen as shown above. Using the *Menu* button, you can access other screens and functions of the thermostat.

Minimized Display Mode
Optionally, you can set the thermostat to show only the temperature in a minimized display mode.

This mode can be set on or off in the thermostat *Users Settings* screen if enabled. (See page 16 for more information)

Other screens
Other standard screens are selected by the Menu button and include: *Schedules*, *User Settings*, *Usage Graph*, *ESM Setpoints* and *Thermostat Info*. Other screens, such as the *Schedules* screen, may be present and selectable from the menu button depending on options included or selected in the installation setup process.

Backlight
The thermostat has a backlit display for low light and night visibility. It can be set to remain on constantly, or to turn off after a 20-45 second delay. These are selectable in the *User Settings* menu.

Z-Wave™ Operation and Programming

Z-Wave™ controllers from various manufacturers may support the Z-Wave™ Thermostat General V2 Device class used by the Trane Z-Wave™ Thermostat. The following procedure will allow the thermostat to be added to a Z-Wave™ network.

If you are using a controller that is not a Schlage bridge, consult the instructions that came with the controller to find out how to enroll a new device.

Inclusion

 a. Hold the bridge within 6 feet (1.8 meters) of the thermostat throughout all of step 2.

  Note: After you begin the enrollment process, you have 30 seconds to complete the remainder of the steps. Study the steps below before beginning.

 b. Press and release the plus (+) button on the bridge.

 c. Press the *MENU* button on the thermostat.

 d. Scroll down to *Z-Wave Install*, and press the *Select* button.

 e. Press the *Yes* button to enroll the thermostat.

 f. Observe the lights on the bridge. The orange light will blink while enrollment is taking place. Enrollment is complete when the orange light becomes solid.

Exclusion

 a. Hold the bridge within 6 feet (1.8 meters) of the thermostat throughout all of step 2.

  Note: After you begin the enrollment process, you have 30 seconds to complete the remainder of the steps. Study the steps below before beginning.

 b. Press and release the minus (-) button on the bridge.

 c. Press the *MENU* button on the thermostat.

 d. Scroll down to *Z-Wave Install*, and press the *Select* button.

 e. Press the *Yes* button to exclude the thermostat.

 f. Observe the lights on the bridge. The orange light will blink while exclusion is taking place. Exclusion is complete when the orange light becomes solid.

Inclusion and Exclusion

Inclusion or exclusion is started by putting the controller into add node or remove node state and performing the procedure outlined above. As part of the process, the thermostat sends a node information frame at normal power. Low power inclusion or low power exclusion is not possible.

Operation

Thermostat Control Buttons

The Thermostats buttons are "Soft Keys" meaning that they change functions when you change screens. The function of the button is defined by "on-screen labels" that are dynamic and change when you change screens.

LEDs

The Thermostat has four LED's that displays status information. The LEDs have dynamic "on-screen" labels that can change with the screen being displayed.

Thermostat Screens

A unique feature of the Thermostat graphical display is the ability to have multiple display screens. In addition to a main thermostat control screen, menus and other control screens for special functions are provided. This makes an intuitive and easy to use "user interface". It allows the many functions of the Thermostat to be easily navigated.

The main screen is the Thermostat Control Screen. From this screen you can access a menu screen that will list other control screens or setup screens.

Thermostat Control Screen

This is the thermostats default screen and the only screen needed for basic thermostat operation (temperature setting and heat/cool mode selection). All other screens will automatically timeout and return this screen after 120 seconds of no activity.

Minimized Thermostat Screen

(This feature is disabled by default. See page 16, Screen Timeout for more information)

The main thermostat screen will go to a "minimized" screen after a 30 second timeout period. This presents a simple uncluttered display of the current room temperature.

Menu Selection Screen

Pressing the Menu button on the Thermostat Control Screen will go to the Menu Selection screen. This screen presents a list of the other functions or setup screens that can be selected.

Schedules Screen

(Optional screen) Only shows up in the Menu Selection list if local scheduling is enabled. (See Installer Settings, then System Settings Menu and then Schedule Enable on page 23).

This screen is used to view and edit the time based setback schedules for the thermostat.

User Settings Screen

This screen is a submenu of user settings for the initial setup of the thermostat. You can set the clock, minimized screen timeout, Fahrenheit or Centigrade selection, sensor calibration and display settings.

Usage Graph

Shows daily heating and cooling runtime hours for a week.

ESM Setpoints

This screen is a submenu of the Energy Savings Mode settings. You can set the heating and cooling setpoint setback temperatures. These settings are used when the thermostat is in the ESM mode.

ZWave Install

This screen is a submenu for installing the thermostat into a Z-Wave network. When the Z-Wave network controller is ready to install the thermostat, press the YES button to install.

Thermostat Info Screen

This is a quick reference list of the thermostat firmware versions, Z-Wave network addresses and HVAC system setup.

Thermostat Control Screen

```
┌─────────────────────────────────────┐
│                                       │
│  ┌──────────────────────────┬──────┐ │
│  │ 10:25 AM                 │  △   │ │
│  │ ○  Sys Off         77 H  │      │ │
│  │ ○        72              │      │ │
│  │ ○  Run             74 C  │  ▽   │ │
│  │ ○  Filter                │      │ │
│  │   MENU  MODE  FAN  RUN   │      │ │
│  └──────────────────────────┴──────┘ │
│       Ⓞ    Ⓞ    Ⓞ    Ⓞ              │
└─────────────────────────────────────┘
```
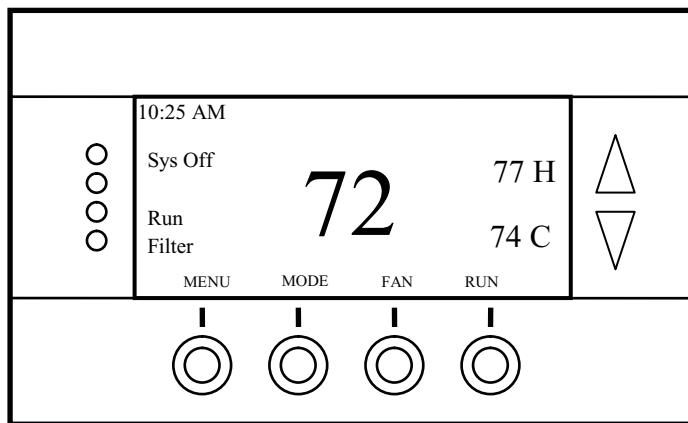
The main Thermostat Control Screen is the default display screen and is the screen that is normally displayed on the Thermostat.

Temperature Display

The Thermostat will display the current temperature from the internal temperature sensor.

Setpoint Display

The heating and cooling setpoints are displayed next to the Setpoint Up/Down buttons. In the HEAT mode, the Up/Down buttons change the heat setpoint. In the COOL mode, they change the cooling setpoint. When in AUTO mode, the buttons change the last call's heating or cooling setpoint. Note that the setpoints will "push" each other if they are adjusted to get within the minimum Heat/Cool separation setting. This is normally 3 degrees.

Clock Display

The current time is displayed in the upper left corner of the main screen. Set the clock from the User Settings Menu.

The time will blink when the clock has not been set.

Thermostat Control Screen Buttons

Setpoint Up and Down Buttons

Pressing the Up or Down button in the main Thermostat Control Screen will take you to the Heating Setpoint or Cooling Setpoint screen, as shown below.

```
       HEATING SETPOINT
                                              Heating
                                               and
            72                      Up          Cooling
                                          ◄──   Setpoint
       Done                         Down       setting
                                               buttons
```
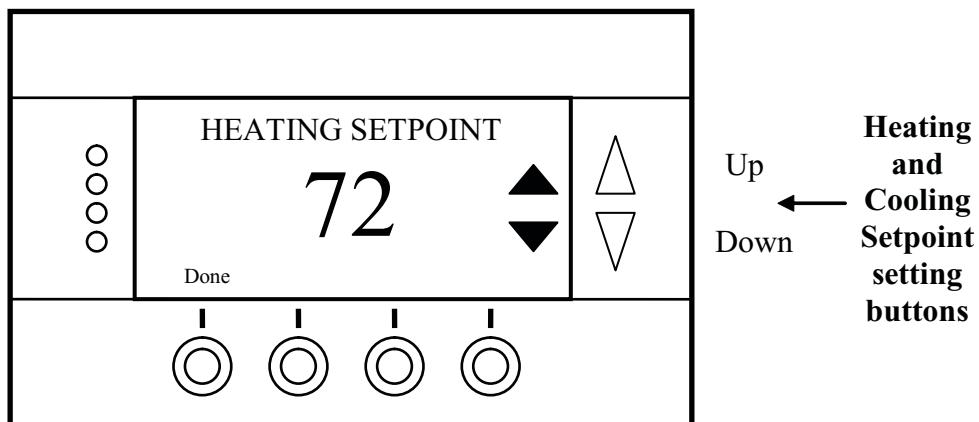
The UP and DOWN buttons adjust the setpoint temperature. Pressing the UP button will increment the setpoint value by one degree and conversely, pressing the Down button will decrement the setpoint one degree. Pressing and holding a button down will cause the setpoint to continuously change until the button is released.

Setpoint Range: The setpoints can be set from 55°F to 90°F (12°C to 32°C) for Heating or 60°F to 99°F (15°C to 37°C) for Cooling.

Setpoint Push: Note that you cannot lower the cooling setpoint below the heating setpoint. The thermostat will push the heating setpoint lower if you try to lower the cooling below the heating setpoint. It maintains a 3 degree separation between the heating and cooling setpoint. The same is true for raising the heating setpoint above the cooling setpoint. Again the thermostat will "push" the cooling setpoint up to maintain the 3 degree separation.

NOTE: If the system mode is OFF, pressing the setpoint Up or Down buttons will take you to the system mode screen. You must set the mode to an operating mode before you can change the setpoints.

To change the Heat Setpoint you must be in Heat mode, to change the Cool Setpoint you must be in the Cool mode.

If you are in Auto mode when you press the Up or Down buttons, you will go to the last call's mode, heating or cooling, setpoint setting screen.

MENU Button

The Menu button changes the screen display to the MAIN MENU screen which show what other functions are available on the Thermostat. These are dynamic and can change with the version of the thermostat you have, but the standard ones include:

## Main Thermostat Screen

Menu Button

    Menu Selection Screen

    User Settings

    Usage Graph

    ESM Setpoints

    ZWave Install

    Thermostat Info

MENU	OFF MODE	AUTO FAN	RUN
◯	◯	◯	◯

MODE Button

The MODE button controls the HVAC system mode. The current mode selected is displayed above the button. Pressing the MODE button will take you to the System Mode screen.

Pressing the Up or Down buttons will scroll through the mode options. Pressing done or waiting for the screen to timeout will select the new mode.

System Mode Screen

SYSTEM MODE
OFF
HEATING
COOLING
AUTO
EHEAT

Done   Mode

Use the Up/Down buttons to scroll through the
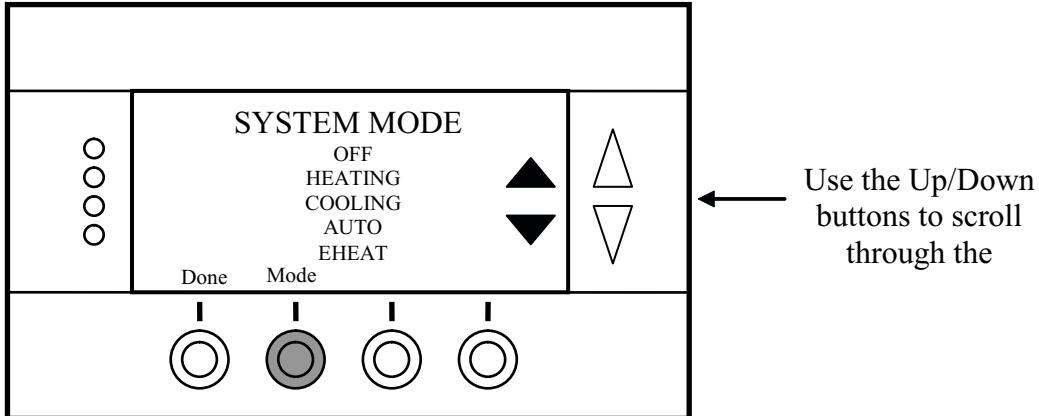
Mode Operation

Off Mode: System is off. No heating or cooling will come on. If system was on, it will turn off.

Heat Mode: Only heating will occur.

Cool Mode: Only cooling will occur.

Auto Mode: Heating or cooling will come on according to the heating and cooling setpoints. The system will automatically switch between heating and cooling when the temperature exceeds the appropriate setpoints.

EHEAT Mode: Emergency Heat mode is only displayed when Heat Pump HVAC System Type is selected. During extreme weather conditions or when there is a compressor failure with the heat pump system, setting the mode to EHEAT will allow the supplemental heat to come on whenever there is a heat call to provide heating and also disables the compressor outputs.

FAN Button

The FAN button controls the HVAC system's MANUAL fan. The current manual fan mode is displayed above the button. Pressing the FAN button will take you to the FAN MODE screen shown below.

Fan Mode Screen

Use the Up/Down buttons to scroll through the
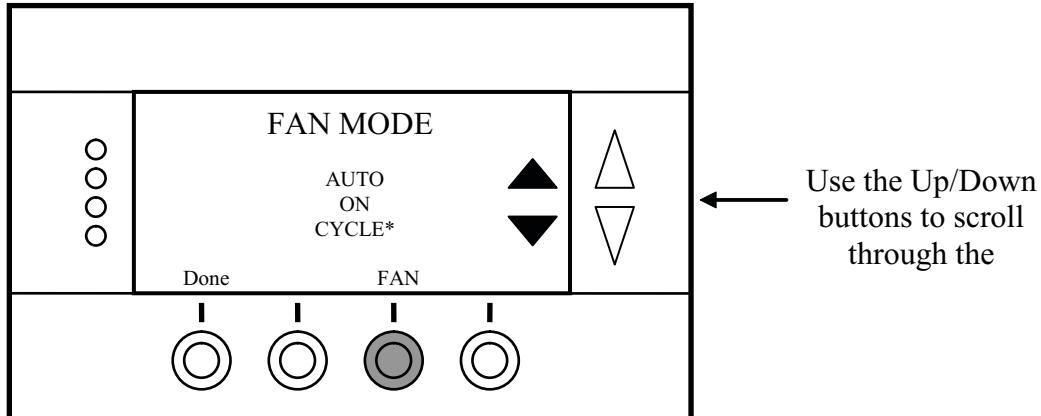
Normally the FAN mode is in the Auto mode (the system fan is automatically controlled by HVAC system). If you want the FAN on manually, select the ON mode. The fan will run continuously until it is turned to off by selecting AUTO mode.

NOTE: If the Fan Cycler feature is enabled in the Installer Setup, the additional fan mode "Cycle" will be available. This mode cycles the fan on and off per the settings for fresh air ventilation.

RUN/HOLD/ESM Button

The RUN/HOLD/ESM button controls the automatic SCHEDULE operation. Pressing this button will take you to the SCHEDULE MODE screen as shown below.

Run/Hold/ESM Screen

Use the Up/Down buttons to scroll through the
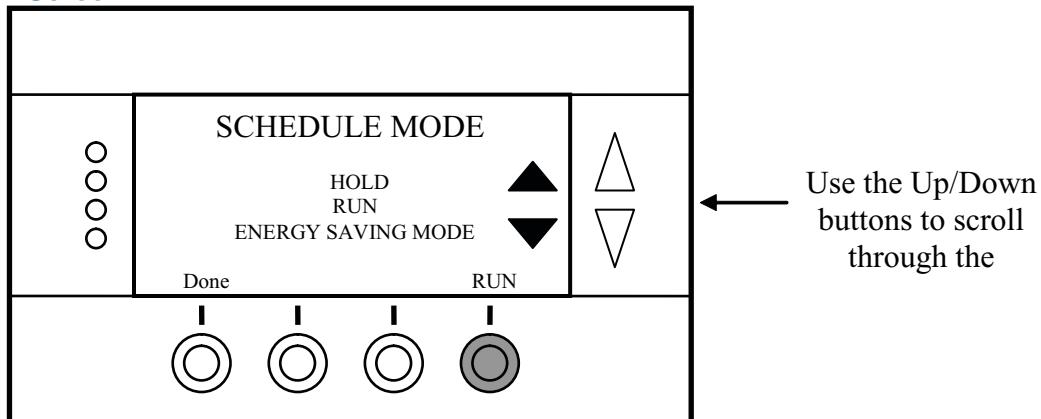
Run Mode. In the run mode, the thermostat schedule is running and setpoints will change according the times and temperatures in the schedule. The schedule can be local (if enabled in the Installer Settings) or remote via the Z-Wave network.

Hold Mode. This holds the current temperature setpoint settings. The schedule operation is inhibited.

Energy Savings Mode (ESM). This is a setback mode. When selected, the ESM temperature setpoint settings are used. It also inhibits schedule operation.

LED Displays

The Thermostat Control Screen has the following LED and on-screen labels numbered from top to bottom.

- **LED 1 Green: System Operation display**

  - *Sys Off* displayed = HVAC system is OFF; LED Off.

  - *WAIT* displayed = Minimum Off Time (MOT)delay is active; LED Off (Note: See pages 25 and 30 for more information on the Minimum Off Timer)

  - *Cool On* displayed = Cooling system is running; LED On.

  - *Cool On* displayed = Cooling Min Run Time (MRT); LED On. (Note: See pages 25 and 30 for more information on the Minimum Run Timer)

  - *Heat On* displayed = Heating system is running; LED On.

  - *Heat On* displayed = Heating Minimum Run Time (MRT); LED On. (Note: See pages 25 and 30 for more information on the Minimum Run Timer)

- **LED 2 Green: System Stage display**

  - No display = 1st stage heating or cooling. LED Off.

  - *2nd Stg* displayed = Stage 2 heating or cooling is active. LED On.

  - *Aux Heat* displayed = Stage 3 heating is active. LED On.

- **LED 3 Green: Run/Hold/ESM display. Shows state of Schedule Run/Hold Mode.**

  - *Run* displayed = Schedule mode is active. LED Off.

  - *Hold* displayed = Temperature hold is active. LED On.

  - *ESM* displayed = (Energy Savings Mode) Temperature preset is active. LED On.

- **LED 4 RED: Alert LED. Used for other system alerts**

  - No display = No alerts or messages. LED Off.

  - *Filter* displayed = Filter run timer reached. LED On.

  - *Maint* displayed = Maintenance run timer reached. LED On.

Main Menu

The Thermostat has a menu tree that can be accessed by pressing the "Menu" button on the Main Thermostat screen. Various configurations of the Thermostat can have different screen contents. The first screen that will come up is the Menu Selection screen. This is a list of the other menus or functions that can be accessed.

Schedules Screen. (Optional Screen) Only shows up in the Menu Selection list if scheduling is enabled. (See Installer Settings, then System Settings Menu and then Schedule Enable on page 23). This screen is used to view and set the programmable setback schedules of the thermostat.

User Settings Screen. This screen is used to set the Clock, Filter Service and Maintenance Service, Screen Timeout, Fahrenheit/Celsius settings, Sensor Calibration and Backlite/Display settings.

Usage Graph. Shows daily heating and cooling run time hours for a week.

ESM Setpoints. Used to set the Energy Savings Modes heating and cooling setpoints.

ZWave Install. Used to install the thermostat into a ZWave network.

Thermostat Info Screen: This screen shows the firmware versions of the Thermostat and Zwave interface, HVAC system type and equipment options.

Main Menu
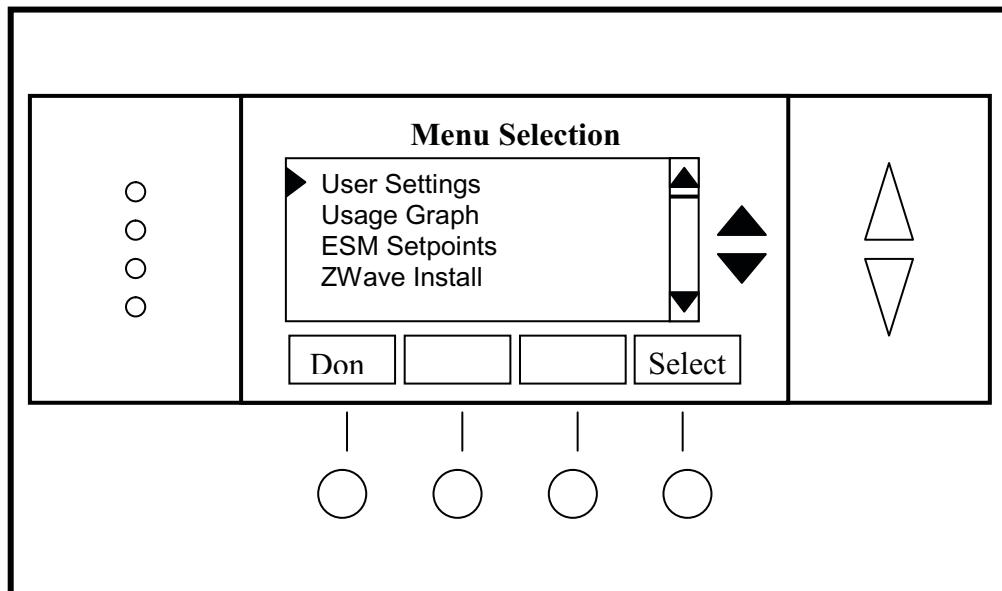
Screen navigation buttons:
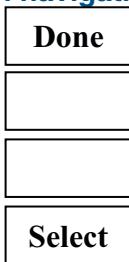
|		
Done	Return to Thermostat Screen	△ Move menu selection pointer up
	Not used	
	Not used	
Select	Select menu item at pointer	▽ Move menu selection pointer

Schedules

Schedules is an optional menu item. It will only show up in the menu list if "Schedules" is enabled in the Installer settings for the thermostat (See page 23). Provides for local schedule control. The Schedules Screen allows you to review and set the setback schedule for the thermostat. The thermostat has a 4 x 7 schedule. Four times a day can be selected for changes to the heating and cooling setpoints. Each day of the week can have a different schedule. Groups of days can be copied with the same schedule. When the thermostat is set to "Run" mode, the schedule will be executed daily, with the setpoints being changed as per that days schedule stored in the thermostat. "Hold" mode stops schedule operation and holds the current setpoints until changed manually or by network commands.

The Schedules Screen gives you the option of setting a custom setback schedule or to load one of two preset schedules.

Menu Options

•   Heat and Cool: You can change the individual day/hour and setpoints for the Heating and Cooling schedule by selecting this menu item.

•   Preset: Comfort: This is a preset schedule with mild setbacks. Select this menu item to load the Comfort schedule into the thermostat.

•   Preset: Energy Star: This is a preset schedule with deeper setbacks. Select this menu item to load the Energy Star schedule into the thermostat.

Schedules Screen

Screen navigation buttons:

Done	Return to Main Menu Screen
Select	Select the schedule to view or modify

△ Move menu selection pointer up

▽ Move menu selection pointer

Heat and Cool Schedules

When you select the Heat and Cool Schedule menu item, the "day" Schedule programming screen opens and the schedule for current day will be displayed. Use the scroll buttons to highlight the data to be modified. Once the data has been highlighted, use the +/- buttons to change the value of the data.

To copy a days schedule to another day or group of days, move the cursor to "c" on the bottom right of the schedule screen. When you highlight the "c", the button below will become "Copy". Press this button to change to the Copy Schedule Screen.

Schedule Screen

	Monday			
	Time	Heat	Cool	
Morn	6:00 A		72	82 +
Day	9:00 A	68	84	
Eve	5:00 P	74	76	−
Nite	10:00 P	70	78	c

Don ◄ ► Next

Screen navigation buttons:

Done — Return to Main Menu Screen

◄ — Scroll Back

► — Scroll Forward

Next — Select the next Day schedule

Copy — OR if the copy "**c**" is selected,

△ — + Increment time or temperature

▽ — - Decrement time or temperature

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Copy Schedule

The Copy Schedule screen is a sub screen of the Schedule screen. The Copy Schedule screen allows you to copy a day's schedule to another day or group of days.

First select the day to be copied in the Schedule screen. Scroll to the "c" at the bottom of the Schedule screen to highlight it. The "Next" button will change to the "Copy" button. Press the "Copy" button to open the Copy Schedule screen.

Scroll through the days and select the days you want to copy the schedule to by setting the "N" under each day to "Y" by using the Yes/No buttons.

After selecting all the days desired, press the "Copy" button.

Exit the Copy Schedule screen with the "Back" button.

Copy Schedule Screen
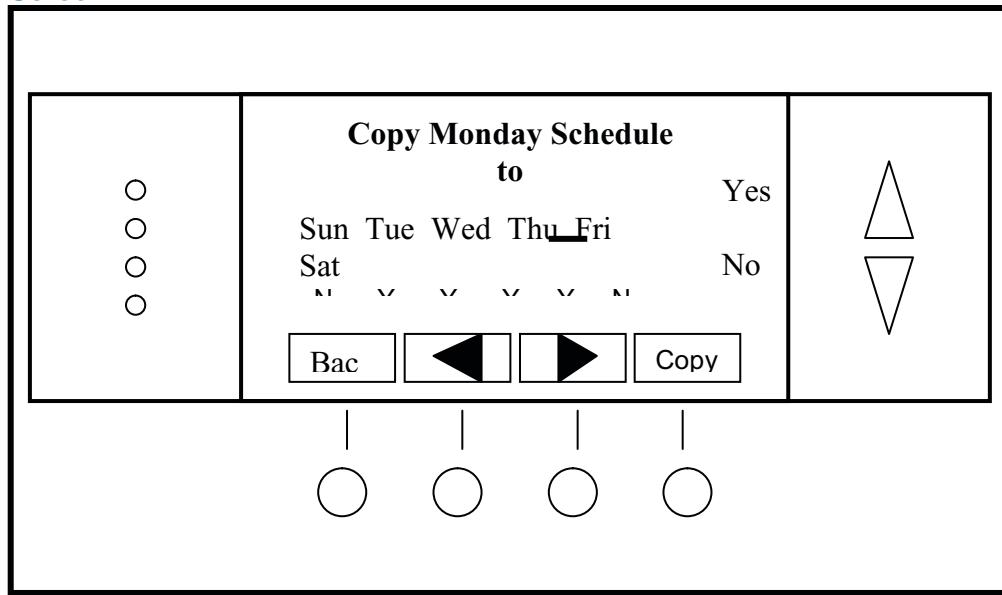
Screen navigation buttons:

Back	Return to Schedule Screen
◀	Move back with selection bar
▶	Move forward with selection bar
Copy	Copy the schedule to the selected days

△ Yes - Copy schedule to this day

▽ No - Do not copy to this day

User Settings

The User Settings screen allows you to set or change various user options of the thermostat such as the Clock, Minimized Screen timeout, Fahrenheit/Celsius mode, Sensor Calibrations, and Display settings.

Menu options:

- Set Clock: Select this menu item to go to the Clock setting screen.

- Filter Service: Sets/resets the filter timer/alert.

- Maint Service: Sets/resets the maintenance timer/alert.

- Screen Timeout: Select the Screen Timeout time in seconds. Options are 0 or 20 to 120 (default set to 0 seconds). This is the time before any screen reverts to the Minimized Screen (temperature display only), after you stop pushing buttons. Minimized Screen feature is disabled by setting this time to "0".

- F/C Mode: Select which temperature display mode you desire, Fahrenheit (F) or Celsius (C).

- Sensor Calibration: Select this menu item to go to the Sensor Calibration screen.

- Backlite/Display: Select this menu item to go the Backlite/Display settings screen. This menu allows you to set the backlight timeout period and adjust the display contrast.

User Settings Screen
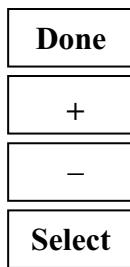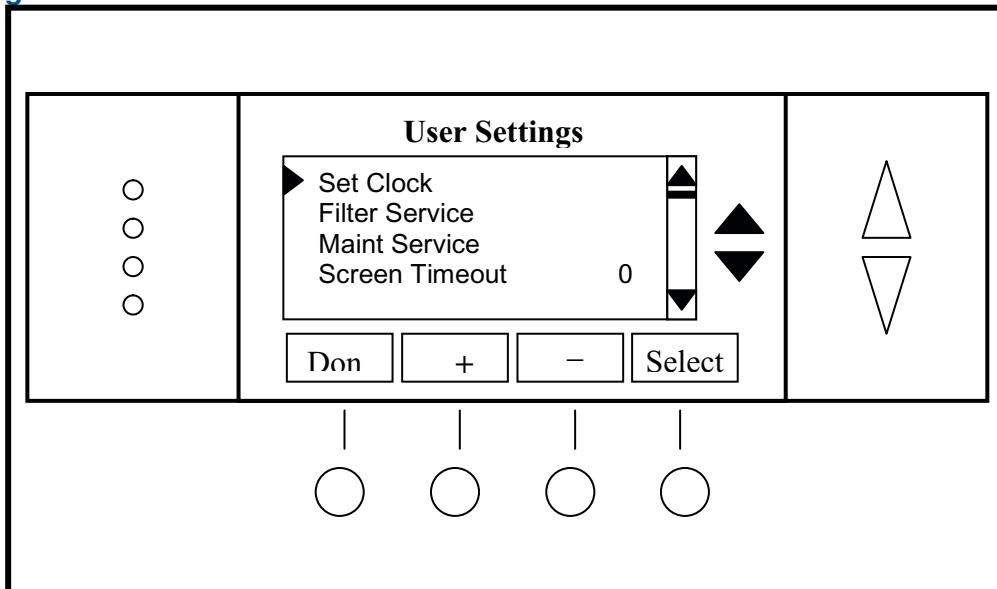
 Done — Return to Main Menu

 + — Increment value

 − — Decrement value

 Select — Select the function to be set

 Move menu selection pointer up

 Move menu selection pointer

Set Clock

The Set Clock screen allows you to set the Thermostat's internal clock.

To set the Time and Date, move the cursor with the navigation arrows until the data you want to change is highlighted.

Using the + and – buttons to increment or decrement the data to the desired setting.

When finished, press the SET button to return to the Main Menu screen or wait for screen to timeout.

NOTE: If the clock has been reset by an extended power outage, the Clock display on the thermostat screen will be blinking. Pressing the MENU button will take you directly to this screen to set the clock.

Set Clock Screen

Set Clock

Time	12:00 PM	+
Date	7/13/08	
Day	Thu	−

Back   ◄   ►   Set
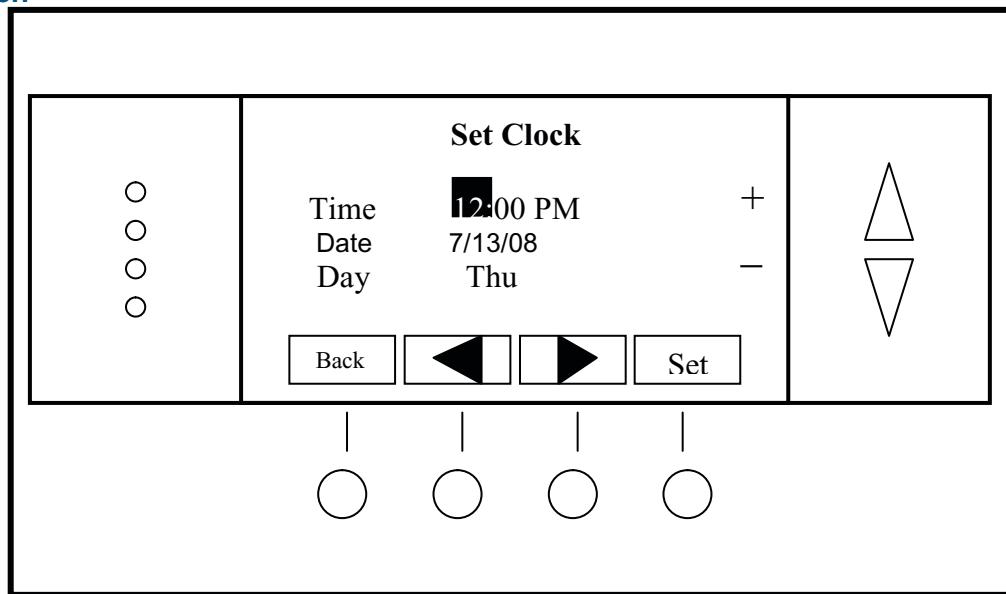
Screen navigation buttons:

Back	Cancel and return to User Settings Menu
◄	Move back with selection box navigation arrow
►	
Set	Move forward with selection box navigation arrow

△ + Increment selected item

▽ - Decrement selected item

Filter Service

The Filter Service screen will show the accumulated Filter Runtime hours as well as the Service Interval that will be used to trigger a Filter Message. Any type of HVAC operation that causes the HVAC system fan to run will cause the Filter Runtime value to increase.

When the Runtime hours equals the Service Interval hours, the Red LED will flash along with a "Filter" message to remind you to replace the filter. Pressing the Menu button will take you to the Filter Service screen. Once the filter has been replaced, press the Reset button to reset the Filter Runtime value to zero.

The Service Interval period can be changed using the +/- buttons.

Filter Service Screen
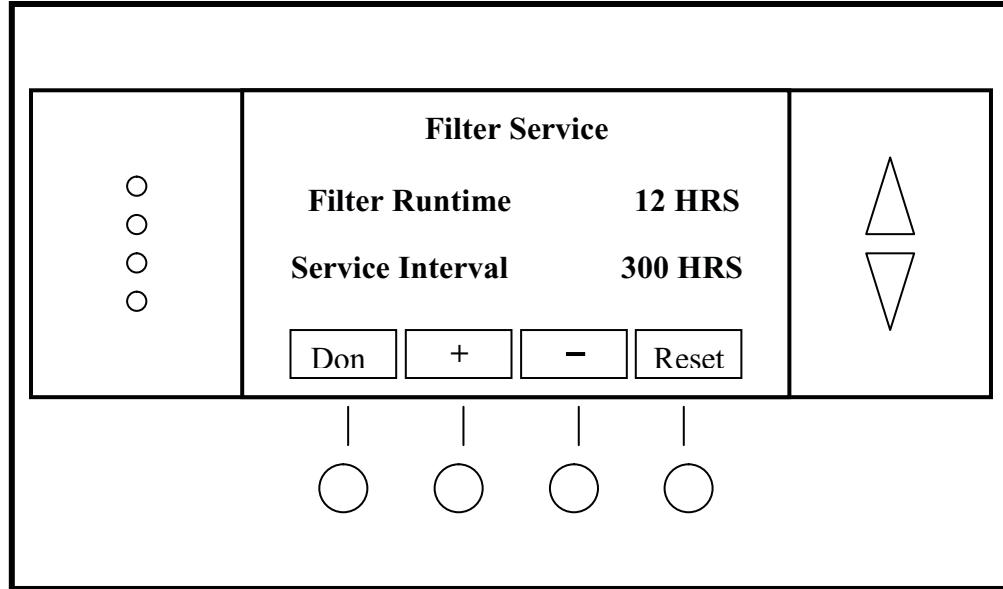
	Filter Service	
○ ○ ○ ○	**Filter Runtime** **12 HRS** **Service Interval** **300 HRS** Don + — Reset	△ ▽

Screen navigation buttons:

| Button	Function
Done	Return to Main Menu Screen
+	Increase the Service Interval by 1 hour
—	Decrease the Service Interval by 1 hour
Reset	

Maint Service

The Maintenance Service screen will show the accumulated Heat and Cool Runtime hours as well as the Service Interval that will be used to trigger a Maintenance Message. Any HEAT or COOL type of HVAC operation will cause the respective Runtime values to increase.

When the combined HEAT and COOL Runtime hours equals the Service Interval hours, the Red LED will flash along with a "Maint" message to remind you your HVAC system may require periodic maintenance. Pressing the Menu button will take you to the Filter Service screen. The Reset button can be pressed and the HEAT and COOL Runtime values will be reset to zero.

The Service Interval period can be changed using the +/- buttons.

Maintenance Service Screen

Maintenance Service

Heat Runtime	0 HRS
Cool Runtime	0 HRS
Service Interval	3000 HRS

Don | + | − | Reset

Screen navigation buttons:

Done	Return to Main Menu Screen
+	Increase the Service Interval by 1 hour
−	
Reset	Decrease the Service Interval by 1 hour

Sensor Calibration

The Sensor Calibration screen allows you to change the temperature calibration of the internal temperature sensor. You can change the temperature calibration by +/- 7 degrees.

When the Sensor Calibration screen is selected it will show the current temperature calibration (The (75) in the example screen below) and the current number of degrees of offset being applied (1 deg in the example). If the sensor's actual temp is (74) with 0 degrees of offset and you want it to be 75, then press "+" to add 1 deg and it will show (75).

To change the temperature calibration, use the scroll buttons to select the internal or a remote sensor. Once selected, use the + and – buttons to change the temperature calibration to the desired setting.

The value shown in the (xx) is the calibrated or offset temperature that you want the sensor to show.

When you close this screen, it may take a few seconds for the temperature displayed on the main thermostat screen to update to the new temperature.

Sensor Calibration Screen

Screen navigation buttons:
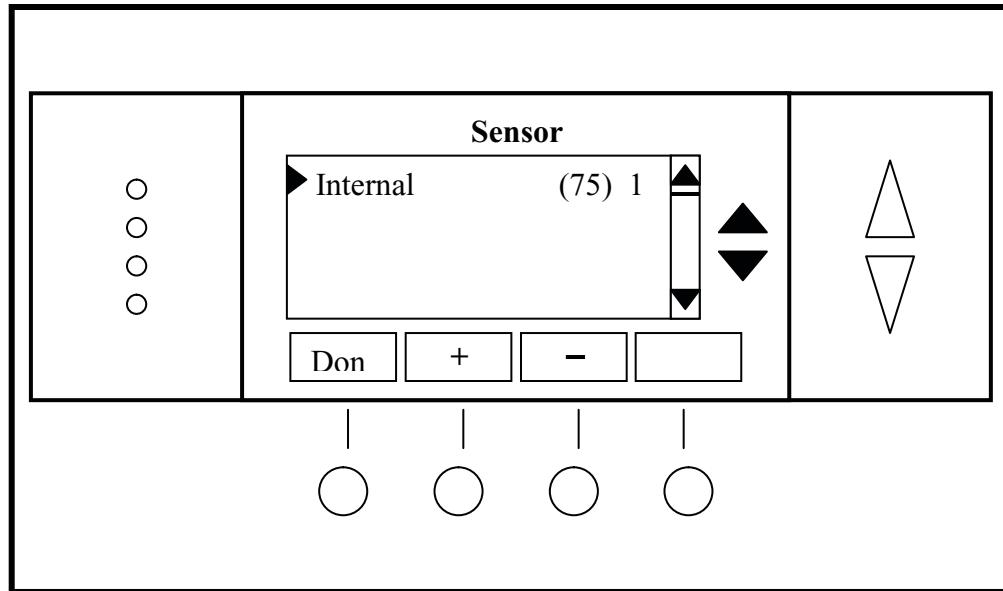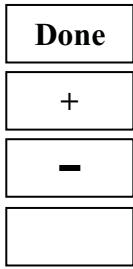
Button	Function
Done	Return to Main Menu Screen
+	Increase the temperature by 1 deg
–	Decrease the temperature by 1 deg
	Refresh screen temperatures

Backlite/Display

The Backlite/Display screen allows you to set the Backlite timeout and contrast.

Backlite Timeout: Sets the time from last button press that the backlite will timeout and turn off. The timeout value is adjustable from 0 or 20 to 120 seconds. If set to "0", the Backlite will always be ON. If set in the range of 20 to 120 seconds, the Backlite will turn OFF after the selected time expires.

Contrast: Sets the contrast level of the LCD display, adjustable from 0 to 20. Use this control to adjust the darkness of the display. To light and the display looks faded, too dark and dark lines will appear in the display. Typically 10 is the correct setting. Adjust as needed.

Backlite Settings Screen
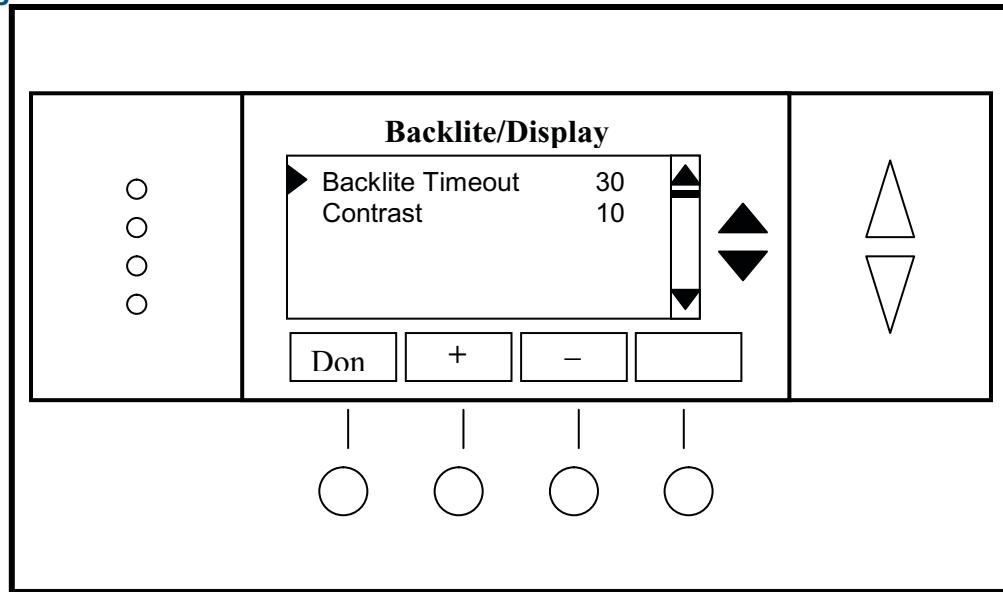
Screen Navigation Buttons

Done	Return to User Settings menu
+	Increment value
−	Decrement value

△ Move menu selection pointer up

▽ Move menu selection pointer

Thermostat Info

The Thermostat Info screen displays the current configuration of the Z-WAVE Thermostat. This information is useful for quick check of firmware versions and HVAC system setup. It also shows the Zwave network setting.

Thermostat information displayed is:

- Thermostat - Model and firmware version number.

- Z-Wave Settings - ZWave Firmware version, ZWave Node ID, ZWave Home ID

- System Type - Standard or Heatpump HVAC system

- Fan Type - setting for Standard systems: Gas or Elect

OR

- Changeover - setting for Heat Pump systems: Changeover with cool or changeover with heat.

When finished viewing this screen press the Done button to return to the main Menu screen or wait for screen to timeout.

Thermostat Info Screen

Thermostat Info

TZEMT400AB32   Ver: 01.00.00
ZVER:01.02.2   ZNID: 002
ZHID: 00.00.50.12
System Type: Standard
Fan Type: Gas

Don
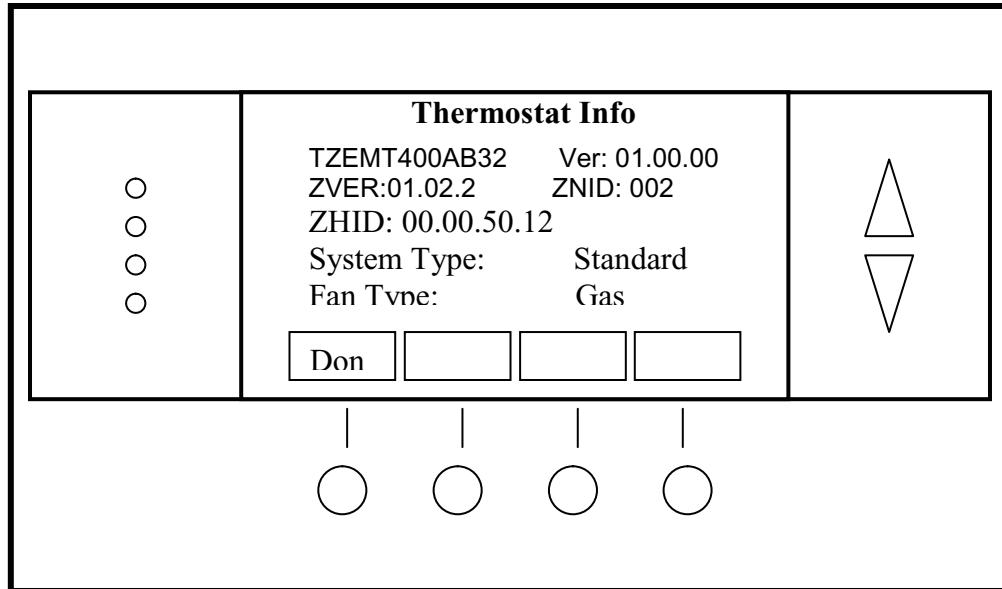
Screen navigation buttons:

Done   Return to Main Menu screen.

Installer Settings Menu   (Hidden Screen)

The Installer Settings screen is a hidden screen designed for installer use only. Do not change any settings in this screen unless you are a qualified service technician. Changing these settings will affect the operation of the heating/cooling system.

To enter this screen, go to the main menu selection screen and press and hold the two inner buttons for 3 seconds until the Installer Settings screen appears.

The Installer Settings screen displays the current internal settings of the thermostat. You can view and change the settings from this screen. Scroll to the desired function and use the +/- buttons to change.

Display Lock: Range: Y or N   Default: N

Y = Display LOCKED

N = Display unlocked

Allows you to lock or unlock the thermostat buttons. When the buttons are locked, you can still access the main menu, but you will not be allowed to select any menu options. The Installer Settings hidden button operation is always operational, allowing you to return to this screen and turn Display Lock off.

System Settings Menu

Mechanical Settings Submenu

Type   Range: Gas/Elec or Heatpump   Default: Gas/Elec
Selects HVAC type, Gas/Electric or Heatpump

Fan Type   Range: Gas or Elec   Default: Gas
Selects the Fan type if system is Gas or Electric

C/O Type   Range: w/Cool or w/Heat   Default: w/Cool
Set the Heat pump Changeover type

2nd Stage Heat   Range: Y or N   Default: N
Enables the 2nd Stage Heat operation

Aux Heat (HP)   Range: Y or N   Default: Y
Enables the Auxiliary Heat operation. Typically the Aux Heat will be heat-strips in a Heatpump system

2nd Stage Cool   Range: Y or N   Default: N
Enables the 2nd Stage Cool operation

Schedule Enable   Range: Y or N   Default: N
When enabled, the local thermostats scheduler function is enabled.

Note on Delta Settings: The Delta T Setting is the delta, or difference between, the setpoint and current temp for determining when a heat or cool call comes on. The "delta" is the number of degrees away from setpoint.

H/C Delta   Range: 3 - 15 degrees.   Default: 3
Sets the minimum separation between heating and cooling setpoints. Attempts to lower the cooling below the heating setpoint by this amount will PUSH the heating setpoint down to maintain this separation. Same for setting the heating setpoint above the cooling setpoint, it will PUSH the cooling setpoint up to maintain this separation.

Heating Delta Stage 1 ON   Range: 1 to 8 degrees   Default: 1
Sets the delta from setpoint that stage 1 heating starts.

Heating Delta Stage 1 OFF   Range: 0 to 8 degrees   Default: 0
Sets the delta from setpoint that stage 1 heating stops. Stage 1 turns off at setpoint + Delta Stage 1.

Heating Delta Stage 2 ON   Range: 1 to 8 degrees   Default: 2
Sets the delta from setpoint that stage 2 heating starts.

Heating Delta Stage 2 OFF   Range: 0 to 8 degrees   Default: 0
Sets the delta from setpoint that stage 2 heating stops. Stage 2 turns off at setpoint + Delta Stage 2.

Heating Delta Stage 3 ON   Range: 1 to 8 degrees   Default: 3
Sets the delta from setpoint that stage 3 heating starts.

Heating Delta Stage 3 OFF   Range: 0 to 8 degrees   Default: 0
Sets the delta from setpoint that stage 1 heating stops. Stage 3 turns off at setpoint + Delta Stage 3.

Cooling Delta Stage 1 ON   Range: 1 to 8 degrees   Default: 1
Sets the delta from setpoint that stage 1 cooling starts.

Cooling Delta Stage 1 OFF   Range: 0 to 8 degrees   Default: 0
Sets the delta from setpoint that stage 1 Cooling stops. Stage 1 turns off at setpoint - Delta Stage 1.

Cooling Delta Stage 2 ON   Range: 1 to 8 degrees   Default: 2
Sets the delta from setpoint that stage 2 cooling starts. Stage 2 turns off at setpoint.

Cooling Delta Stage 2 OFF   Range: 0 to 8 degrees   Default: 0
Sets the delta from setpoint that stage 2 Cooling stops. Stage 2 turns off at setpoint - Delta Stage 1.

Max Heat SP   Range: 55F to 90F (12C-32C)   Default: 90F (32C)
Sets the maximum heating setpoint value. Will not ramp or accept setpoints higher that this maximum.

Min Cool SP   Range: 60F to 99F (15C-37C)   Default: 60F (15C)
Sets the minimum cooling setpoint value. Will not ramp or accept setpoints lower than this minimum.

Minimum Run Time (MRT)   Range: 1- 9 Minutes   Default: 3
Sets the minimum run time before a heating/cooling cycle can turn off.
Sets heating/cooling cycle time. Prevents rapid cycling.
Thermostat screen will display "Cool ON" or "Heat ON" while the minimum run time is being enforced.

Minimum Off Time (MOT)   Range: 5-9 Minutes   Default: 5
Sets the minimum off time before another heating/cooling cycle can begin. Provides compressor short cycle protection.
Thermostat screen will display "WAIT".

Fan Cycler Submenu
The fan cycler function cycles the HVAC system fan for an ON period followed by an Off period continuously. Used to provide minimum air ventilation requirements. When the Fan ON time is set to a value greater than 0, an additional "Cycler" FAN mode is present when pressing the FAN button.

Fan ON Time   Range: 0-120 minutes   Default: 0 (=OFF)

Fan OFF Time   Range: 10-120 minutes   Default: 10

Installer Settings Summary

Setting	Range	Default	
Display Lock	Y or N	N	Locks out front buttons
F/C Mode	C or F	F	
Screen Timeout	0-240	0	seconds
Schedule Enable	Y or N	N	
Max heat setpoint	55F-90F (12C-32C)	90F (32C)	
Min cool setpoint	60F-99F(15C-37C)	55F (15C)	
Min Run Time (MRT)	1 – 9	3	
Min Off Time (MOT)	5 – 9	5	
Mechanical - Type	Std or HP	Std	
Mechanical - Fan Type	Gas or Elec	Gas	
Mechanical - C/O Type	w/Heat or w/Cool	w/Cool	
Mechanical - 2nd Stage Heat	Y or N	N	
Mechanical - Aux Heat	Y or N	Y	
Mechanical - 2nd Stage Cool	Y or N	N	
Filter Interval		300	
Maint Interval		3000	
H/C Delta	3 – 15	3	
Heat Delta Stage 1 On	1 – 8	1	
Heat Delta Stage 1 Off	0 – 8	0	
Heat Delta Stage 2 On	1 – 8	2	
Heat Delta Stage 2 Off	0 – 8	0	
Heat Delta Stage 3 On	1 – 8	3	
Heat Delta Stage 3 Off	0 – 8	0	
Cool Delta Stage 1 On	1 – 8	1	
Cool Delta Stage 1 Off	0 – 8	0	
Cool Delta Stage 2 On	1 – 8	2	
Cool Delta Stage 2 Off	0 – 8	0	
Fan Cycler ON time	0 – 120	0	0 = Fan Cycler OFF
Fan Cycler Off Time	10 – 120	10	

Installer Settings Screen

Installer Settings

▶ Display Lock   N
   System Settings
   Max Heat SP   90
   Min Cool SP   55
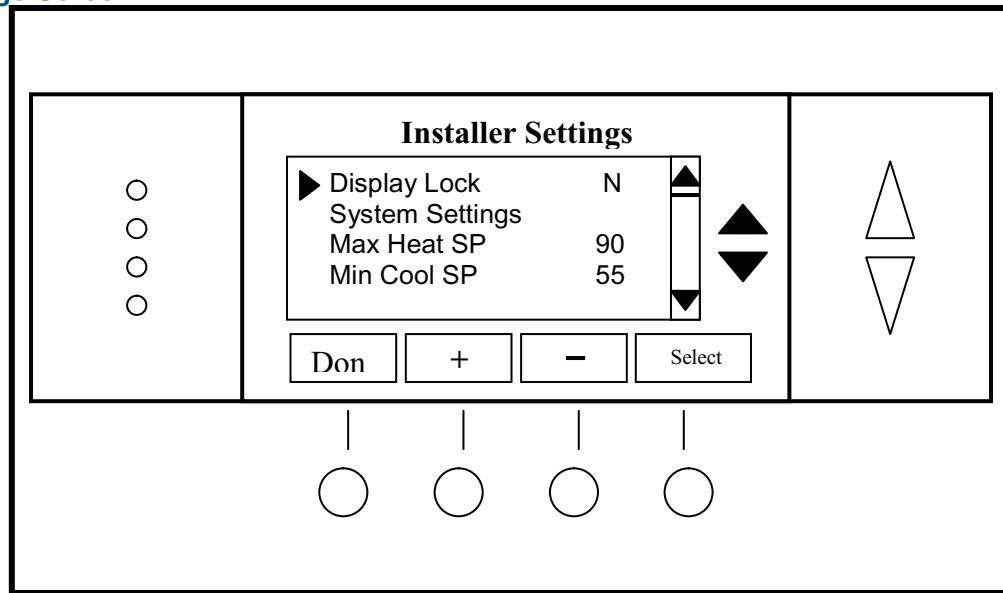
| Don | + | − | Select |

Screen navigation buttons:
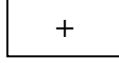
Done	Return to Main Menu screen
+	Increase by 1 or change from N to Y
−	Decrease by 1 or change from Y to N
Selec	Select menu item to go to a submenu

△ Move menu selection pointer up

▽ Move menu selection pointer down

HVAC System Connection

The thermostat connects to the HVAC system's thermostat connections just like a traditional thermostat does.

HVAC System Compatibility

The thermostat is compatible with most heating and cooling systems. There are two types of HVAC systems: Standard (gas/electric) and Heat Pump systems. The system type is selectable from the Installer Screen – System Settings – Mechanical Settings submenu.

For Standard HVAC systems: Gas heating or Electric heating.

For Heat Pump HVAC systems: supports changeover valve operation for either changeover with cooling or changeover with heating.

Multi-Stage HVAC Compatibility

For Standard HVAC systems, the HVAC outputs support 2 stages of heating and 2 stages of cooling.

For Heat Pump HVAC systems, the HVAC outputs support 3 stages of heating (2 compressor/1 Aux Heat) and 2 stages of cooling.

Dual Fuel

NOTE: This thermostat is not compatible with dual fuel systems, without a dual fuel kit. (Heating system with both heat pump and gas furnace.) If you need a dual fuel kit, please contact a qualified heating and cooling contractor.

Remote Communications

The Z-WAVE thermostats have a Z-Wave communications module for communicating to control systems with Z-Wave capability.

Standard Gas/Electric HVAC System Wiring
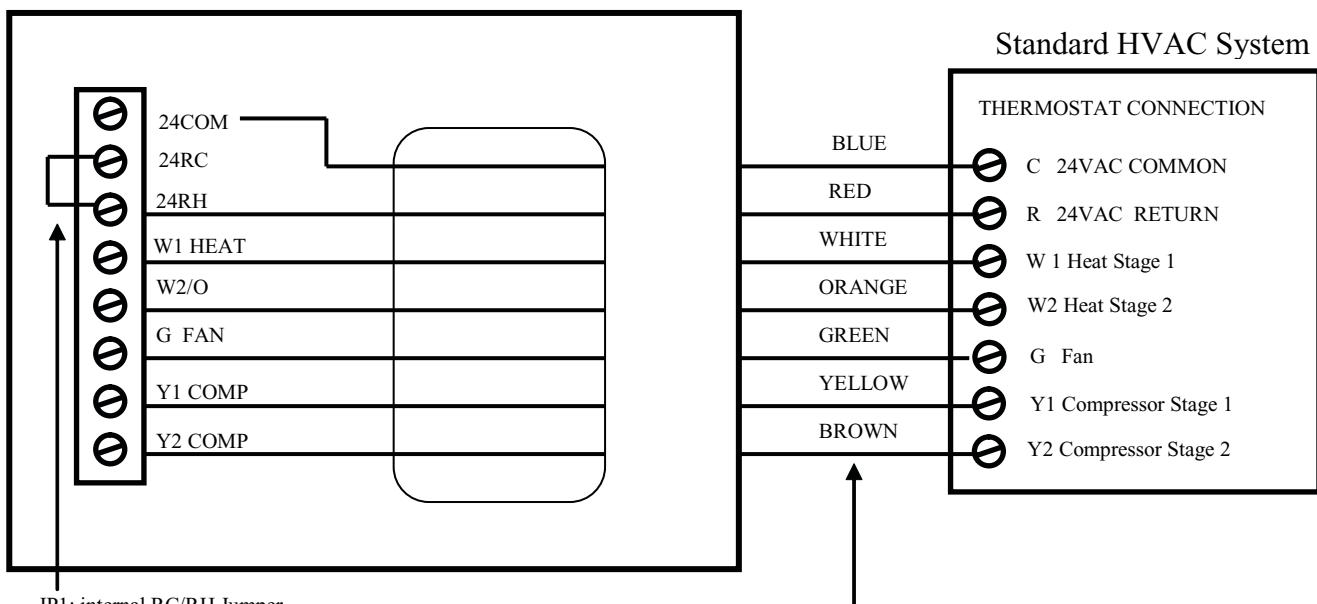
Z-WAVE Thermostat

Standard HVAC System

Typical HVAC system thermostat wiring color codes.

Be sure to verify your

Installation Notes

Standard HVAC System Setup

System Type: Set the system type to Gas/Elect in the Mechanical Settings menu of the Installer Setup. This is the default setting.

Single Stage systems use W1 for heating stage 1 and Y1 for cooling stage 1.

Two Stage Heating systems use W1 for stage 1 and W2 for stage 2 heating.

Two Stage Cooling systems use Y1 for stage 1 and Y2 for stage 2 cooling.

HVAC system transformer: If you have an integrated heating and cooling system with a single transformer, do NOT cut jumper JP1. Wire the HVAC system's 24VAC common (blue wire) to the 24Com terminal and the 24VAC Return (red) wire to either 24RH or 24RC terminal. This is typical of most central systems.

If you have separate heating and cooling systems with separate transformers, cut jumper JP1. Wire the heating 24V R (red) wire to the thermostat's 24RH terminal. Wire the cooling systems 24V R (red) wire to thermostat's 24RC terminal. Also wire the cooling systems 24VAC Common (blue wire) to the thermostat's 24COM terminal.

Heat Pump HVAC System Wiring

Z-WAVE Thermostat

Heat Pump HVAC System

THERMOSTAT CONNECTION

Thermostat Terminal	Color	HVAC System
24COM	BLUE	C 24VAC COMMON
24RC	RED	R 24VAC RETURN
24RH	WHITE	W 1 Aux Heat
W1 HEAT	ORANGE	Change Over Valve
W2/O	GREEN	G Fan
G FAN	YELLOW	Y1 Compressor Stage 1
Y1 COMP	BROWN	Y2 Compressor Stage 2
Y2 COMP		
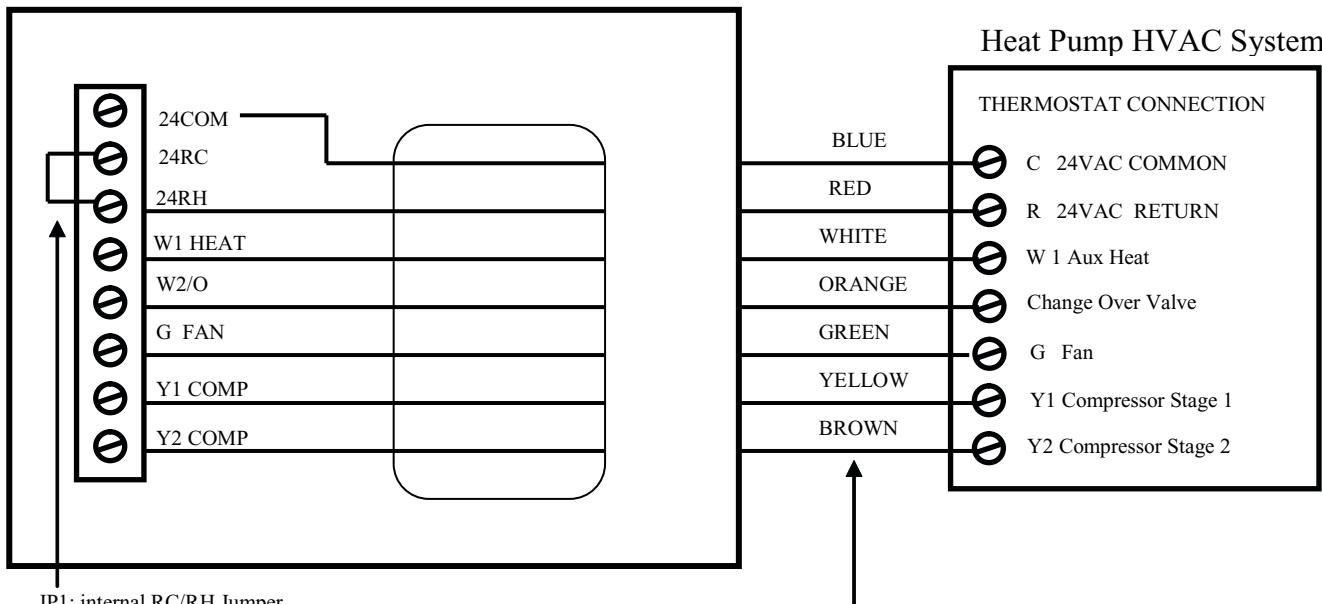
JP1: internal RC/RH Jumper
Do not cut for HP systems

Typical HVAC system thermostat wiring color codes.

Be sure to verify your

Installation Notes

Heat Pump HVAC System Setup

System Type: Set the mechanical system type to Heat Pump in the Installer Settings Menu

Single Stage Compressor Systems use Y1 for stage 1 heating/cooling, and W1 for stage 2 Aux Heating.

Two Stage Compressor Systems use Y1 for stage 1, Y2 for stage 2 heating/cooling, and W1 for stage 3 Aux Heating.

Change Over Valve: You must configure the thermostat's changeover valve setting to work correctly with your HVAC system. Check your system information to be sure.

- Changeover settings are made in the Installer Settings – System Settings - Mechanical Settings menu.

- Changeover with cool is the default setting and typical for most systems.

- If you get cooling when you expect heating, change the C/O type to the opposite setting.

HVAC system transformer: Heat pump systems have one system transformer. Do not cut the RC/RH jumper. Wire the HVAC systems 24VAC common (blue wire) to the 24Com terminal, and the 24VAC return (red wire) to the 24RC terminal.

HVAC System Operation and Setup

General Heating and Cooling Operation

In the HEATING mode, the heating system will be turned on at one degree below the setpoint and will turn off at the setpoint. This turn on and turn off offset is referred to as the heating setpoint "delta T" and is adjustable in the Installer Settings menu of the THERMOSTAT. It is set to the one degree operation by default.

In the COOLING mode, the cooling system will be turned on at one degree above the setpoint and will turn off at the setpoint. Similarly, the cooling setpoint delta T is adjustable in the Installer Settings menu.

In the AUTO mode, the system will switch between heating and cooling as determined by the heating and cooling setpoints and the current temperature. Once in a heating or cooling mode of operation, the normal one degree setpoint control is maintained.

Setpoint Push. Heating and cooling setpoints are forced to maintain a separation between them, with a default setting of 3 degrees. If the heating or cooling setpoint is changed to be within the setpoint delta, the system will automatically "push" the other setpoint to maintain the setpoint delta separation. The H/C setpoint delta is also adjustable in the Installer Settings menu of the THERMOSTAT.

Standard HVAC System Types

Gas or electric heating systems are considered "Standard" HVAC systems. These systems consist of an indoor furnace/blower assembly and an outdoor AC condensing unit (for those systems with air conditioning installed). These systems in general are referred to as central forced air HVAC systems.

You must configure the Thermostat to match your HVAC system type for correct system operation.

Setup

Standard System Type Selection

To configure the Thermostat for standard Gas/Electric HVAC system operation, change the Type in the Installer Settings – System Settings – Mechanical Settings menu option to Gas/Elec.

Fan Type Selection

Gas systems typically do not require a fan output for heating operation. Set the Fan Type in the Installer Settings – System Settings – Mechanical Settings – Fan Type to GAS.

Electric (and hydronic) heating systems typically do require a fan output with the call for heating. Set the Fan Type in the Installer Settings – System Settings – Mechanical Settings – Fan Type to ELEC.

Be sure to check your HVAC system's requirements.

Heat Pump HVAC System Types

Heat Pump HVAC systems are combined heating and cooling systems. The system consists of an indoor "air handler" (a blower fan and coil assembly) and an outdoor unit. Heat pumps change from heating mode to cooling mode by switching the refrigerant flow using a "changeover" or "reversing valve". In both heating and cooling operation the compressor and fan outputs are on and the state of the changeover output determines if heating or cooling is being provided. Heat pumps can have one or two stages of compressor operation plus an optional third stage of electric heat strips.

The third stage of heating will be turned on when the current temperature falls 3 deg below the current setpoint and will turn off at the setpoint.

Setup

Heat Pump System Type Selection
To set the Thermostat for Heat Pump HVAC operation, change the Type in the Installer Settings – System Settings – Mechanical Settings menu option to Heatpump.

Changeover Type Selection
Most heat pump systems are designed to work normally in the heating mode and require a change over output for cooling output. Change the C/O Type in the Installer Settings – System Settings – Mechanical Settings menu option to match your system needs.

Changeover with Cooling: Set C/O Type to w/Cool (This is the default setting).

Changeover with Heating: Set C/O Type to w/Heat.

Note: During Heat Pump operation the changeover relay, once engaged, will stay on until the opposite HVAC call occurs.

Check your HVAC system requirements for correct settings.

Minimum Run Time (MRT)
The thermostat has a Minimum Run Time after the start of any heat or cool call. This minimum run time assures even heating and cooling cycles. Minimum Run Time will keep the system on even if you change the setpoint to a temperature that would satisfy the call, until the MRT expires.   Changing the Mode to OFF will cancel the MRT and the system will turn off immediately. MRT can be adjusted in the Installer Settings Menu of the THERMOSTAT.

Minimum Off Time (MOT)
 The thermostat has a Minimum Off Time after any heat or cool call. This delay prevents rapid heating/cooling cycles and also provides "short cycle protection" for compressor calls. This delay may be noticeable when you change a setpoint and it does not respond immediately due to another call that has recently completed and the MOT delay timer is preventing the restart of the system. The MOT delay time can be adjusted in the Installer Settings Menu of the THERMOSTAT. There is a minimum of 5 minutes delay to assure compressor protection.

Note: "WAIT" will be displayed on the thermostat screen while the minimum equipment off time is being enforced.

Installation

Power

The thermostat requires 24VAC power from the HVAC system it is controlling. Connect the 24VAC Common (typically the Blue wire/terminal) and 24VAC R (typically the Red wire/terminal) from the HVAC system to the thermostats HVAC System terminal block 24VCom and 24V RH or 24V RC terminals (the RH and RC terminals are default tied together)

Common or Split Transformer Systems

Most HVAC systems have a common heating and cooling transformer. A jumper wire is connected to tie the RH and RC inputs together for this configuration. If you have a system with separate heating and cooling transformers, you will need to separate the RH and RC inputs by cutting the jumper on the PCB.

When wiring split systems, wire the heating systems 24VAC R (red wire) to the thermostat's RH terminal, and wire the cooling systems 24VAC R to the thermostat's RC terminal. Also wire the cooling systems 24VAC Com to the thermostat's 24VAC Com terminals.

Note: Do not split RC/RH for Heat Pump systems!
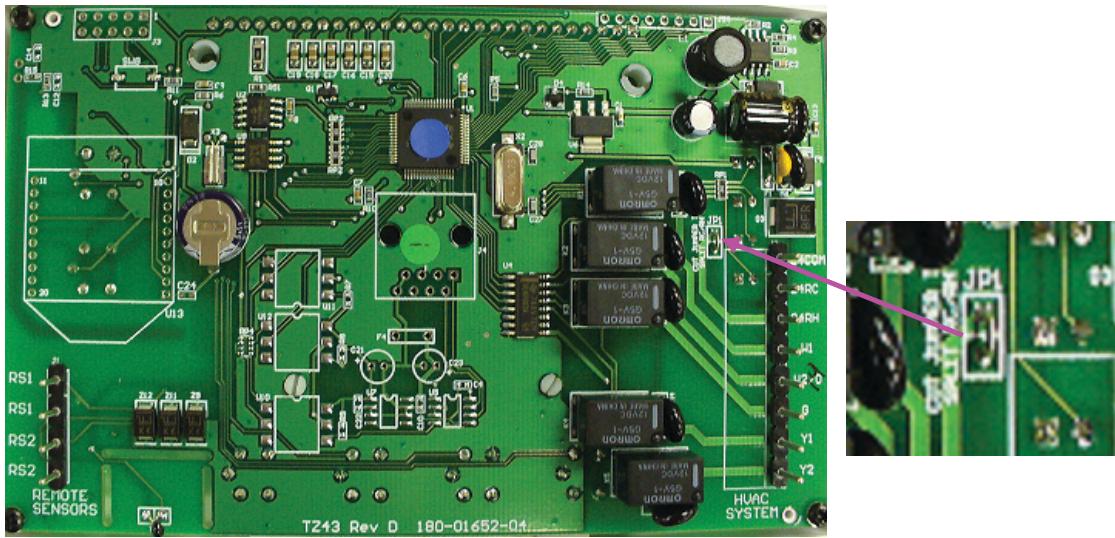
Warranty

Trane Remote Energy Management Thermostat
Limited One (1)-Year Electronics and Mechanical Warranty
U.S.A. and Canada Only

Subject to the terms and conditions of this Limited One (1)-Year Electronics and Mechanical Warranty, Trane warrants that, if within one (1) year from Original Date of Purchase, the Purchased Product fails due to defect in manufacture, material or workmanship, Trane will provide a replacement for the Purchased Product or refund the Original Purchase Price, at its sole option, to the Original Purchaser occupying the premises in which the Purchased Product was originally installed. This warranty applies to the Original Purchaser only and is non-transferable. The one (1)-year limited warranty period begins from Original Date of Purchase, confirmed by sales receipt or other dated proof of purchase.

Exclusions: The following costs, expenses and damages are not covered by the terms and conditions of this One(1)-Year Limited Electronics and Mechanical Warranty: (i) labor and costs including, but not limited to, original initial installation, removal and reinstallation of Purchased Product; (ii) shipping and freight expenses for any required return of Purchased Product; (iii) failures, defects, or damages (including, but not limited to, any security failure or loss of data) caused by any third party product, service, or system connected or used in conjunction with the Purchased Product; and (iv) any other incidental, consequential, indirect, special and/or punitive damages, whether based on contract, warranty (express or implied), tort (including, but not limited to, strict liability or negligence), patent infringement, or otherwise, even if advised of the possibility of such damages. Additionally, this limited warranty does not cover scratches, abrasions, or deterioration due to the use of paints, solvents or other chemicals.

Further, the terms and conditions of this One (1)-Year Limited Electronics and Mechanical Warranty do not apply to Purchased Product when: (1) used in common area applications (2) used for purposes for which it was not designed or intended; (3) subjected to alteration, modification, abuse, misuse, negligence or accident, improper storage, improper installation or maintenance or operation or unauthorized repair; (4) used in violation of written instructions provided for Purchased Product; (5) subjected to improper temperature, humidity or other environmental conditions; or (6) damaged as a result of acts of God.

This One (1)-Year Limited Electronics and Mechanical Warranty is the only express warranty Trane makes on this product. THE DURATION OF ANY IMPLIED WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IS HEREBY LIMITED TO THE ONE-YEAR DURATION OF THIS WARRANTY. IF THIS PURCHASED PRODUCT IS CONSIDERED A CONSUMER PRODUCT, SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THIS LIMITATION MAY NOT APPLY TO YOU. REFER TO YOUR LOCAL LAWS FOR YOUR SPECIFIC RIGHTS UNDER THIS WARRANTY.

Additional items: Trane does not authorize any person to create for it any obligation or liability in connection with the Purchased Product. Trane's maximum liability hereunder is limited to the Original Purchase Price of the Purchased Product. No action arising out of any claimed breach of this warranty by Trane may be brought by the Original Purchaser more than one (1) year after the cause of action has arisen.

If you have a claim under this warranty, please return the Purchased Product to place of purchase for replacement or refund of the Original Purchase Price in exchange for the return of the Purchased Product, including sales receipt or other dated proof of purchase. Contact Schlage Customer Service at 877-288-7707 in U.S.A. and Canada for assistance with set-up and installation, or questions regarding your warranty claim.